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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
SUTTON, ANDREW W	

ART UNIT	PAPER NUMBER
3765	

DATE MAILED: 10/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/805,681	WISE ET AL.	
	Examiner	Art Unit	
	Andrew W. Sutton	3765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 August 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *54 and 56* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *54 and 56* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 8/04/06 have been fully considered but they are not persuasive. The applicant argues that the examiner took official notices in regards to the "natural and synthetic fibers contribute in the node formation." The examiner did not take official notice during the last office action. The examiner feels that the properties claimed would be inherent to the fabric of Imamichi as discussed in the prior office action mailed 5/5/06. This thesis is supported by the Hatch reference supplied in the prior office action and stated on form PTO-892. The examiner will supply the Hatch reference in this response as well to make sure the reference was received.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 54 and 56 are rejected as best understood under 35 U.S.C. 102(b) as being anticipated by Imamichi (US 4,267,710). Imamichi discloses (abstract) a double-knit fabric composed of polyester and cotton fibers. The cotton yarn has a first degree of water absorbency and a first degree of dimensional-transformation upon exposure to water. The synthetic fibers have a second degree of water absorbency and a second degree of dimensional-transformation upon exposure to water. The fabric is a double

knit as stated above, thus is mechanically manipulated. Fig. 3 shows the cotton yarn 3 to the rear of the synthetic yarns 1 and 2. Cotton is a fiber that is hydrophilic which means it absorbs water, which causes the diameter of the fiber to grow. When the water exposed to it, the hydrophilic yarn (cotton) would absorb water, thus increasing in size as stated above. This reaction modifies the first structure of the fabric to a second when exposed to water as claimed. The increased diameter of the cotton yarn would "project" nodes onto the surface of the fabric, as the cotton yarns would be larger in diameter thus pushing the synthetic yarns outward creating nodes. Both the natural and synthetic fibers contribute into the node formation.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew W. Sutton whose telephone number is (571) 272-6093. The examiner can normally be reached on Monday - Friday 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary L. Welch can be reached on (571) 272-4996. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AWS
3 October 2006

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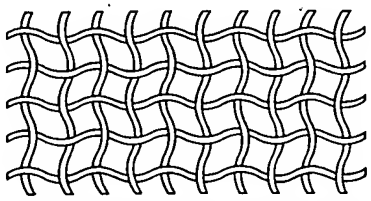
Unit I opener Artwork courtesy of Dow Corning Corporation of Midland, MI. **Table 3.1** Data courtesy of The Polypropylene Council of America, Inc., of New York, NY. **Table 3.2** Data reprinted from *Textiles*, Vol 1(1), 1972, p. 13 with permission of the British Textile Technology Group of Manchester, England. **Table 4.1** Table reprinted from ASTM, *1990 Annual Book of ASTM Standards—Section 7—Textiles*, Vol 7.01, p. 69 with the permission of the American Society for Testing and Materials of Philadelphia, PA. **Table 5.1** Table reprinted from "IFI Fabricare News," July 1987, with the permission of the International Fabricare Institute, 12251 Tech Road, Silver Spring, MD 20904. **Figure 5.1** Photographs reprinted from *Textiles*, Vol 8(3), 1979, p. 70 with permission of the British Textile Technology Group of Manchester, England. **Figure 5.7** Photographs reprinted from "The Proceedings of the 31st Annual Meeting of the Electron Microscopy Society of America," 1973, pp. 58 and 59 with the permission of Claitor's Law Books, 3165 S. Acadian, Baton Rouge, LA 70808. Phone: 800-274-1403; Fax 504-344-0480. **Figure 5.8** Photograph reprinted from *Textiles*, Vol 5, p. 47, 1976 with permission of the British Textile Technology Group of Manchester, England. **Figure 5.9** Drawings reprinted from P. Hadlington and J. Gerozisis, *Urban Pest Control*, 1988, p. 137 with permission of NSW University Press of Kensington, Australia 2033. **Figure 6.1** Photograph reprinted from J. Foussereau, C. Benezra, and H. I. Maibach (eds.), *Occupational Contact Dermatitis*, 1982 with permission of Munksgaard Publishers of Copenhagen, Denmark. **Figure 6.2** Photographs reprinted from the *Textile Research Journal*, Vol 57, 1987, p. 27 with permission of the Textile Research Institute. **Figure 6.4** Drawings reprinted from S. Watkins, *Clothing: The Portable Environment*, 1984, pp. 43 and 51 with permission of the Iowa State University Press. [illegible] reprinted from S. Watkins, *Clothing: The Por-*

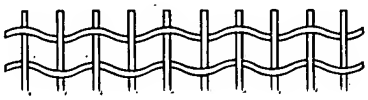
6.7 Drawings reprinted from L. R. Sauvage, M.D., [illegible] 80s," 1980, with permission of the Hope Heart Institute of Seattle, WA. **Unit II opener** Artwork courtesy of Boehme Filatex, Inc., of Reidsville, NC. **Figure 7.1** Data obtained from the *1992 AATCC Technical Manual* (Test Method 20A—1981) and used with permission of the American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709. **Figure 7.4** Wool fiber structure reprinted from *Industrial & Engineering Chemistry*, Vol 44 (9), 1954, p. 2158 with permission of the American Chemical Society of Washington, DC. **Figure 7.9** Drawings reprinted from *Textiles*, Vol 16(2), 1987, p. 50 with permission of the British Textile Technology Group of Manchester, England. **Figure 7.10** Drawing and captions reprinted from *Textiles*, Vol 16(2), 1987, p. 52 with permission of the British Textile Technology Group of Manchester, England. **Figure 7.11** Drawing and captions reprinted from *Textiles*, Vol 16(2), 1987, p. 53 with permission of the British Textile Technology Group of Manchester, England. **Figure 7.12** Drawings reprinted from Hoechst Celanese, *The Dictionary of Fiber and Textile Technology* (2nd ed.), 1990, pp. 146–147 with permission of Hoechst Celanese Corporation of Charlotte, NC. **Figure 7.14** Drawing reprinted from *Textiles*, Vol 16(3), 1987, p. 82 with permission of the British Textile

(Credits continue after Index)

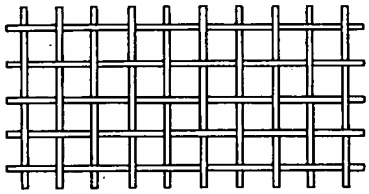
FIGURE 5.3 Different amounts of yarn crimp in a woven fabric.



The most stable configuration: yarn crimp in both lengthwise and crosswise yarns.



A typical yarn configuration after weaving: lengthwise yarns are taut.



The least stable configuration: a typical yarn configuration after routine finishing: both lengthwise and crosswise yarns are taut.

that results in a fully relaxed fabric which is the most stable configuration.

Lesser degrees of crimp lead to shrinkage. During weaving, the lengthwise yarns are held very taut in a straight configuration. Fabric in this state will shrink mainly in the lengthwise direction as the warp yarns seek the most relaxed state, a more crimped configuration. During dyeing and finishing, the cloth is wet and hot and under tension in both the lengthwise and crosswise directions. The hot, wet fibers are readily molded to a new shape, and the fabric is commonly dried while under tension. A fabric also can be stressed in both directions, the least stable configuration; in this case, the potential for shrinkage in both length and width is high.

In knitted fabrics, the stable state is controlled by the interplay of forces required to shape the interlocking loops of yarn. The loops in knitted fabric can be elongated by 35% during manufacture, providing great potential for shrinkage.

When fabric is removed from manufacturing equipment, it usually cannot assume a balanced or most stable state because frictional forces between the yarns and fibers hinder movement. Wetting the fabric does not allow the fabric to fully relax (to assume the most stable state). Agitation in soap or detergent (which acts as a lubricant) decreases the frictional forces between yarns and fibers, and the fabric then begins to assume its most stable state. Usually, a single wash (no matter how long it continues) will not bring the cloth to its most stable state. Shrinkage may continue throughout several washes, but the amount lessens with each wash. This phenomenon is called *progressive shrinkage*.

ment to occur. The polymers may fold up or be brought into better registration (Figure 5.4). In either case, the fiber contracts. Manufacturers of synthetic fiber fabrics usually heat set the fabric, so that it has little or no tendency to shrink when exposed to normally encountered temperatures. However, if the consumer exposes the fabric to temperatures higher than those for which the fabric has been heat set, shrinkage will occur. Generally, a clothes dryer would need to be malfunctioning badly for heat shrinkage to occur. For example, nylon and polyester fibers are heat set at temperatures of ~390° F (200° C), and dryer temperatures seldom exceed 158° F, or 70° C (measured in exhaust gases).

Swelling. In addition to relaxation shrinkage, some fabrics shrink during laundering because their fibers absorb water molecules and *swell* (increase in diameter). Hydrophilic fibers (cotton, flax, rayon, silk, and wool) can swell 14–26% in diameter; hydrophobic fibers do not swell much, if at all. Fabrics containing rayon fibers are most likely to exhibit the greatest swelling shrinkage or growth, because rayon fibers absorb the most water.

Fiber swelling leads to fabric shrinkage (Figure 5.5). A swelling in fibers is accompanied by a corresponding swell in the yarn because the fibers are held close to each other by the twist in the yarn. In other words, fiber swelling does not simply fill the interstices between the fibers in the yarn. The increase in yarn diameter requires an increase in yarn crimp, because each yarn must interlace with a larger yarn. An increase in crimp can occur only at the expense of a reduction in fabric length and